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Research paper

The prevalence and correlates of severe depression in a cohort of Mexican teachers

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ABSTRACT

Background: Depression is among the 10 major causes of disability in Mexico. Yet, local contextual factors associated to the disorder remain poorly understood. We measured the impact of several factors on severe depression such as demographics, pharmacotherapy, multimorbidity, and unhealthy behaviors in Mexican teachers.

Methods: A total of 43,845 Mexican female teachers from 12 Mexican states answered the Patient Health Questionnaire (PHQ9). Data were part the Mexican Teacher's Cohort prospective study, the largest ongoing cohort study in Latin America. Unadjusted and adjusted estimates assessed the impact of several contextual factors between severe versus mild-no depression cases.

Results: In total 7026 teachers (16%) had a PHQ9 score compatible with severe depression. From them, only 17% received psychotropics, compared to 60% for those with a formal diagnosis. Less than 5% of teachers with PHQ9 scores compatible with severe depression had a formal diagnosis. Adjusted analysis reported higher odds of pharmacotherapy, having ≥ 3 comorbidities, higher levels of couple, family and work stress, fewer hours of vigorous physical activity, higher alcohol consumption, and smoking as risk factors for severe depression. Also, rural residents of northern and center states appeared more severely depressed compared to their urban counterparts. On average, the PHQ9 scores differed by ~ 10 points between severe and mild-no depressed teachers.

Limitations: A cross-sectional design. Also, the study focused on female teachers between ages 25 and 74 years old, reducing the generalizability of the estimates.

Conclusion: Under-diagnosis of clinical depression in Mexican teachers is concerning. Unhealthy behavior is associated with severe depression. The information collected in this study represents an opportunity to build prevention mechanisms of depression in high-risk subgroups of female educators and warrants improving access to mental care in Mexico.

1. Introduction

Depression is a common mental disorder and the second leading cause of disability globally (World Health Organization(WHO), 2012). An estimated 350 million people suffer from depression worldwide. In Mexico, mayor depressive disorder is ranked the 6th leading cause of disability (Institute for Health Metrix and Evaluation (IHME), 2015), ranking higher than chronic kidney disease, oral disorders, and anxiety. The estimated mean life-time prevalence of depression in Mexico is 8% with slightly higher life-time prevalence for women 10.4% than for men 5.4% (Rafful et al., 2012). Data gathered worldwide reports several risk factors linked to depression. For example, age between 45 and 55 represents the highest life-time prevalence in women and over 55 years old in men. The twelve-month prevalence of major depressive disorder has been estimated at 3.7% (Medina-Mora et al., 2005). In short, younger age, low income, female gender and the group of divorced, widowed and separated individuals are strongly associated factors with an increase in 12 month prevalence in reporting mental disorders (Medina-Mora et al., 2005). Compared to the general population, teachers tend to present higher levels of stress and higher proportion of common mental issues, but no previous study has examined in the Mexican context which contextual factors are more impactful on poor

Abbreviations: PHQ9, Patient Health Questionnaire – 9 items version depression module

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teacher mental health (Kidger et al., 2016).

Moderate to severe depression can significantly impair daily functioning and reduce quality of life. In some cases it can result in self-harm and suicide (World Health Organization(WHO), 2012). Even though pharmacotherapy and psychotherapy are effective therapy options, a worrisome low access to these services remain a concern in low and middle-income countries. In Mexico, only 1 in 3 receive pharmacotherapy in the first 12 months of onset (28% women and 36.7% men) (Rafful et al., 2012). Moreover, only 23.8% of individuals with severe and 20.8% with moderate mental disorders receive some form of treatment (Medina-Mora et al., 2005). A couple of factors such as being female and lower levels of education may be associated with receiving pharmacotherapy (Medina-Mora et al., 2005). Yet, to our knowledge, no previous study exists in Mexico investigating prevalence of depression and intervening correlates among Mexican teachers.

Previous international literature has reported a strong association between depression and medical and contextual factors. Indeed, persons with medical chronic conditions are more likely to develop depression (Moussavi et al., 2007a; Parekh et al., 2011; Zielinski et al., 2000), and vice versa (Moussavi et al., 2007b). Such link seems to be stronger for some severe conditions such as diabetes type 2 and cancer (Lara Muñoz et al., 2014; Martínez Hernández et al., 2014). Also, contextual factors such as socio-economic deprivation and income inequalities have been linked to depression (Fernández-Niño et al., 2014). Other factors such as education level, smoking, and alcohol consumption are less understood and the literature remains mixed regarding the direction and magnitude of the association. For example, it is unclear whether the educational level is a life-time risk predictor of developing depression (Medina-Mora et al., 2007), or whether smoking is associated with subsequent depression and anxiety, and vice versa (Fluharty et al., 2017). In addition, specific factors related to Mexico's unique circumstances such as drug-related violence and substance abuse has been associated with higher odds of depression and post-traumatic stress disorder (PTSD) (O'Connor et al., 2014).

Henceforth, we aim to analyze the prevalence of depression in female teachers in Mexico and assess the magnitude of the association between depression and several factors including demographics, lifestyle decisions, place of living, stress mediators, and pharmacotherapy.

2. Methods

2.1. Study population

This study used a cross-sectional analysis design for the first follow up cycle (2011–2013) of the Mexican Teacher's Cohort (MTC) study. Briefly, the MTC is a prospective cohort study of 115, 315 female teachers living in a culturally, geographically, and economically diverse 12-state area in Mexico that started collecting data in 2006. The purpose of the study is to investigate risk factors for chronic diseases in a female population undergoing a rapid epidemiological transition. Participants respond to questionnaires on lifestyle, reproductive factors and medical conditions every 3 years. Methodological details about recruitment, data recompilation and cleaning have been described elsewhere (Lajous et al., 2015). For the purposes of the study, the 12-states are divided in 4 regions (Mexico City, North, South and Center). The study population were female teachers between the ages of 25–74 with a valid Patient Health Questionnaire – 9 items version depression module– (PHQ9) between 2011 and 2013. A total of 43,845 teachers met these criteria. Women with and without the PHQ9 assessment did not differ significantly in terms of age and number of comorbidities frequencies. As a consequence, we did not apply any imputation techniques to the data. This study has approval from the Institutional Review Board at the National Institute of Public Health, Mexico.

Table 1
Descriptive statistics of teachers with PHQ9 scores: severe vs mild-no depression.

	Total (N = 43,845)		PHQ9 Severe Depression (N = 7026)		Mild- No Depression (N = 36,819)	
Characteristics	No.	%	No.	%	No.	%
Psychotropic use						
Yes	2344	7.9	948	18.85	1396	5.69
No	27,217	92.1	4081	81.15	23,136	94.31
Number of comorbidities						
0	21,901	49.95	2666	37.94	19,235	52.24
1	11,140	25.41	1795	25.55	9345	25.38
1–3	10,032	22.88	2252	32.05	7780	21.13
> 3	772	1.76	313	4.45	459	1.25
Age						
25–34	5870	13.39	933	13.28	4937	13.41
35–44	15,085	34.40	2300	32.74	12,781	34.71
45–54	20,310	46.32	3466	49.33	16,844	45.75
> 55	2584	5.89	327	4.65	2257	6.13
Region						
Mexico City	7191	16.40	1250	17.79	5941	16.14
North	11,863	27.06	1740	24.77	10,123	27.49
Center	11,927	27.20	1844	26.25	10,083	27.39
South	12,864	29.34	2192	31.20	10,672	28.99
Type of residential area						
Urban	30,263	75.78	4727	74.35	25,536	76.05
Rural	9673	24.22	1631	25.65	8042	23.95
Physical activity						
Mild-Moderate (< 3 h week)	1189	2.73	166	2.38	1023	2.35
Mild-Moderate (> 3 h week)	1228	2.82	148	2.12	1080	2.48
Vigorous (< 3 h week)	30,508	70.01	5041	72.25	25,467	69.58
Vigorous (> 3 h week)	10651	24.44	1622	23.25	9029	24.67
Family stress						
Severe-Moderate	25,313	57.73	5460	77.71	19,853	53.92
Mild-Minimum	18,532	42.27	1566	22.29	16,966	46.08
Work stress						
Severe-Moderate	32,294	73.65	6032	85.85	26,262	71.33
Mild-Minimum	11,551	26.35	994	14.15	10,557	28.67
Couple stress						
Severe-Moderate	16,951	38.66	3941	56.09	13,010	35.34
Mild-Minimum	26,894	61.34	3085	43.91	23,809	64.66
Alcohol consumption (glasses/month)						
Never	35,902	81.88	5530	78.71	30,372	82.49
Less than three	6812	15.54	1260	17.93	5552	15.08
More than four	1131	2.58	236	3.36	895	2.43
Smoking status						
Yes	3701	8.77	811	12.06	2890	8.15
No	38,480	91.23	5915	87.94	32,565	91.85
Prior diagnosis of depression						
Yes	1918	4.37	840	11.96	1078	2.93
No	41,927	95.63	6186	88.04	35,741	97.07

2.2. Depression assessment

PHQ9 is the 9-item depression module from the full PHQ. As a severity measure, the PHQ9 score ranges from 0 to 27. Each of the 9 items are scores from 0 (not at all) to 3 (nearly every day). The instrument has been validated by exploratory and confirmatory analysis in this population as an appropriate measure of depressive symptoms (Kroenke and Spitzer, 2002; Manea et al., 2012). Table 1 describes the thresholds for none, mild, moderate, moderately severe, and severe. For the purpose of this study, we decided to choose 10 as a single cut point to identify